

Date: Fri, 28 Oct 94 04:30:36 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: List
Subject: Ham-Homebrew Digest V94 #318
To: Ham-Homebrew

Ham-Homebrew Digest Fri, 28 Oct 94 Volume 94 : Issue 318

Today's Topics:

 Decoding Digital Data (2 msgs)
 Impedence matching?
 Local Radio Jammer?
 Looking for Motorola Pager Manual
 Missconcept on TX impedance! (2 msgs)
 What jumper on u16 to allow field programming?
 Where does the power go? Part 2 (3 msgs)

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>

Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Thu, 27 Oct 1994 06:42:59 GMT
From: ac827@lafn.org (Tom Rugg)
Subject: Decoding Digital Data

In a previous article, starin@netcom.com (Jeffrey Starin) says:

>I am wondering if anyone in this newsgroup would know of a method for
>capturing digital data in the airwaves and piping it into a computer
>Soundblaster card for analysis.
>
>Any help much appreciated.
>
>Please feel free to contact me directly by e-mail, or post here for the
>benefit of others who may want to know same.
>
>Thanks

>--

>Jeffrey

>{New York}

>

I'm beginning to be interested in the same thing. I haven't found any source code yet, other than an example of how to do simple input and output with the Soundblaster using BASIC. I'm a programmer, and I'm willing to do some development on this, but it would be nice to have some information about the various types of digital transmissions that are broadcast, especially the ones that are fairly simple (and not encrypted). Can anyone provide some information about frequencies, data rates, data representation, and the like? And of course any example programs would help a lot, too. Thanks.

--Tom Rugg

Date: Tue, 25 Oct 1994 20:07:52 +0000
From: Leon@lfheller.demon.co.uk (Leon Heller)
Subject: Decoding Digital Data

In article <starinCy5B5r.LqM@netcom.com>
starin@netcom.com "Jeffrey Starin" writes:

> I am wondering if anyone in this newsgroup would know of a method for
> capturing digital data in the airwaves and piping it into a computer
> Soundblaster card for analysis.
>
> Any help much appreciated.
>
> Please feel free to contact me directly by e-mail, or post here for the
> benefit of others who may want to know same.

I don't know about the SB, but some amateurs are using the Cardinal PR016 and similar sound cards based on the Analog Devices ADSP-2115 DSP for PACTOR - HF packet radio.

Leon

--

Leon Heller	"Do not adjust your mind, there is
G1HSM	a fault in reality": on a wall
Email: leon@lfheller.demon.co.uk	many years ago in Oxford.
Phone: +44 (01734) 266679	

Date: 26 Oct 1994 22:55:31 +0200

From: k23690@proffa.cc.tut.fi (Kein{nen Paul)
Subject: Impedence matching?

Dana Myers (myers@Cypress.West.Sun.Com) wrote:

[about a front end for the 80 m band]

> Other options include using an MAR/MSA device, which offers an excellent
> input match to 50 ohms but will tend to be noisier and more expensive than
> a JFET. Also, you'd need to use a strong MSA part, like an MSA-1104,
> which offers a P1db of +17dBm with a NF of 3.3dB or so. At HF, this
> device might be a really good option.

Unlike other MAR/MSA devices, the characteristics for MAV-11 (and
apparently also for MSA-1104) are not specified down to DC.
The specified frequency range is 10 MHz - 1000 MHz.

For DC and other low frequency applications MAR-4 (MSA-0485)
P1dB +11 dBm, NF 7 dB might be more suitable (DC - 1000 MHz).

Please note that as MSA/MAR/MAV MMICs have a lot of gain well above
1 or 2 GHz, it is very important to keep strong TV and FM-broadcast
signals out of the amplifier. Elliptic low-pass filters and capacitively
coupled band-pass filters are problematic, as their attenuation at
VHF and UHF frequencies might be only 20-40 dB.

A normal 3 or 5 element pi low-pass filter at the input will usually
do the trick.

Paul OH3LWR

--

Phone	: +358-31-213 3657	Mail: Hameenpuisto 42 A 26
Internet:	Paul.Keinanen@cc.tut.fi	FIN-33200 TAMPERE
Telex	: 58-100 1825 (ATTN: Keinanen Paul)	FINLAND
X.400	: G=Paul S=Keinanen O=Kotiposti A=ELISA C=FI	

Date: Fri, 28 Oct 1994 01:17:27 GMT
From: a-rickf@aladdin.tandem.com (frazier_rick)
Subject: Local Radio Jammer?

In article an4@usenet.INS.CWRU.Edu, aa377@cleveland.Freenet.Edu (Ken Kopin)
writes:

>

> Hey all. A friend of mine has been enduring Country AND Western music
> at work for about as long as he can stand. Are there any pre-existing
> files on building a mono-frequency, low-power jammer? Proximity could be
> as far as 30' away, or closer if necessary. Any covering signal would
> be nice (from dead-air to killer decibels) but cost and ease are our
> main concerns.
>
> If you could point me to a FTP site, or some such, I am capable of
> doing the rest, most likely.
>
> Thanks!
>
> Ken Kopin

I don't know if you'd want to do any actual _jamming_.....

But if the country western music is coming from an FM station, a low power FM transmitter that happened to be on the same frequency would come in on the radio.... Because FM is affected by the capture effect, where the strongest signal on frequency is detected by the FM receiver, you could get interesting results with a legal, low power FM transmitter. Try a FM transmitter kit (available from your local electronics store, or the back pages of many electronic magazines).

Of course, for even more interesting results, you might try an FM "bug" on the same frequency. Placed nearby, it would set up a rather severe feedback loop that would result in a howling you wouldn't believe.

Of course, you _could_ just ask the owner of the C&W music machine to turn it down or use headphones... Naw, I guess that's already been done.

Of course, if the radio is AM, things are a bit different, though the heterodyne squeal of a nearby transmitter, even legal, low power could be rather disturbing.

One of the main problems with this sort of approach, besides the legal\ implications if things get out of hand, is the likelihood the offending radio just gets moved to another frequency, or magically turns into a tape machine or CD player. Short of destructive measures, there's little you can do about them, if requests to the individual or manager fall on deaf ears...

Wishing you the best in your efforts....
-Rick

Rick Frazier at Atalla Corporation, San Jose, CA.

a-rickf@ac.tandem.com

Date: Thu, 27 Oct 1994 12:18:30 GMT
From: vaillan@ireq.hydro.qc.ca (Clement Vaillancourt)
Subject: Looking for Motorola Pager Manual

We would like to modify some Motorola UHF PBR2000 Tone and Voice pagers to the UHF Ham band for usage by our Club members.

We already changed the crystal and got one working on 448.275 MHz. We now have a small "birdy oscillation" in the background and would like to get ride of it. To do so, we would like to have a copy of the manual and fine tune the unit.

The complete Motorola model number of the pager is: A04BGC2568A and the required manual number might be: 6881006B15.

We will pay for the cost of the copies and if you know a source for more of these used pager, we would like to buy more.

Thank you very much, 73 de Clem. VE2HQJ

Clement Vaillancourt, Institut de Recherche d'Hydro-Quebec
Analyste, Varennes, P. Quebec, Canada, J3X 1S1
Informatique scientifique Tel:+1 514 652 8238 Fax:+1 514 652 8309
Int: vaillan@ireq.hydro.qc.ca Radio-Amateur: VE2HQJ@VE2CRL.#MTL.PQ.CAN.NA

Date: 27 Oct 1994 20:36:43 GMT
From: rkarlqu@scd.hp.com (Richard Karlquist)
Subject: Missconcept on TX impedance!

In article <3819a6\$1ree@info2.rus.uni-stuttgart.de>,
<moritz@ipers1.e-technik.uni-stuttgart.de> wrote:

>
> There is a common misunderstanding regarding the output impedance
>of power amplifiers designed for 50 Ohms loads and to
>their matching to a load.
>
> All wide band power amplifiers, amateur or professional (e.g. the ENI
>1-550 MHz amp in my QRL) behave somewhat like an audio amplifier
>(Yes I am simplifying here, but this does not affect the general
>message). They are IN FIRST APPROXIMATION a voltage source,
>with a maximum current capability. If operated into a too

More likely, a current source, as the output impedance of a transistor

is usually higher than the load impedance. For example, a 12V 100 Watt exciter transforms the 50 ohm load down to 1 ohm or so. The output impedance of the transistor is considerably higher than 1 ohm.

Actually, the output impedance could look like a low dissipation capacitor or a low dissipation inductor of any value. Any point near the unit circle of the Smith chart will do (near infinite VSWR).

Rick N6RK
rkarlqu@scd.hp.com

Date: Thu, 27 Oct 1994 23:24:54 GMT
From: tomb@lsid.hp.com (Tom Bruhns)
Subject: Missconcept on TX impedance!

Richard Karlquist (rkarlqu@scd.hp.com) wrote:

: In article <3819a6\$1ree@info2.rus.uni-stuttgart.de>,
: <moritz@ipers1.e-technik.uni-stuttgart.de> wrote:
: >
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: >
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: exciter transforms the 50 ohm load down to 1 ohm or so. The output impedance
: of the transistor is considerably higher than 1 ohm.

: Actually, the output impedance could look like a low dissipation capacitor
: or a low dissipation inductor of any value. Any point near the
: unit circle of the Smith chart will do (near infinite VSWR).

I agree with Rick that most ham transmitters are likely to look like a fairly high impedance source (compared with 50 ohms), but if the final amplifier uses feedback, this can be altered quite a bit. I don't know if any are actually fairly close to 50 ohms. They COULD be designed this way, but if you read between the lines of Rick's second paragraph, you realize that this is really a bad thing. This is because the reflected wave would be all absorbed in the transmitter, and it would cause heating somewhere, most probably in the output active devices. Whether you think in terms of

the reflected wave being absorbed in a resistance or a change in the load line, the answer comes out the same. If the output causes a very high SWR for the reflected wave, that's a GOOD thing because it means that reflected wave can't be dissipated in the transmitter and will instead be sent back down the transmission line for another try at dissipating in the load (with a little lost in the line along the way). BTW, if you think that a high SWR can't cause high dissipation in the final amplifier, consider a load line that is completely reactive: that is, the load line becomes a circle. Or consider a load that reflects to the active devices as a short circuit, a vertical load line. If the load is bad enough, even a transmitter that tries to re-reflect the reverse wave will end up eating it.

73, K7ITM

Date: Wed, 26 Oct 1994 22:41:36 UTC
From: an22190@anon.penet.fi
Subject: What jumper on u16 to allow field programming?

Hi,

I am interested in finding out which jumper needs to be removed in order to allow the Icom U16 to be field programmable? Are some models not able to be programmed from the keyboard? How can I check if my radio will allow it?

Best Wishes,

Andrew.

PS: Please excuse my anon posting however it assures that my mail reaches usenet. I would prefer if you could reply via e-mail as my USENET reading site is often down :(

To find out more about the anon service, send mail to help@anon.penet.fi. Due to the double-blind, any mail replies to this message will be anonymized, and an anonymous id will be allocated automatically. You have been warned. Please report any problems, inappropriate use etc. to admin@anon.penet.fi.

Date: 27 Oct 1994 07:30:02 -0400
From: jimn0oct@aol.com (JimN0OCT)
Subject: Where does the power go? Part 2

In article <38m6gv\$7o9@abyss.West.Sun.COM>, myers@Cypress.West.Sun.Com (Dana Myers) writes:

Don't forget gentlemen, that the output the original post was describing was the output of an **antenna tuner** not the amplifier itself. I applaud the experiments, but to be true to the original post, it should contain a T-network (or whatever is inside the '440) as the output.

73, Jim

Date: 27 Oct 1994 18:34:27 GMT
From: Cecil_A_Moore@ccm.ch.intel.com
Subject: Where does the power go? Part 2

In article <9409267832.AA783201194@mails.imed.com>,
<mack@mails.imed.COM> wrote:
>

>If Gary's assertion is correct that the transmitter is not a "real" resistance
>and that the power will instead be reflected back, then there should be an
>infinite SWR on the line. If my understanding of the theory is correct, then
>there should be 1:1 SWR (i.e. the transmitter will absorb all the power).

Hi Ray, the Mini-Circuits manual lists the Output Return Loss of the MAR-4
at 100MHz as -4.73db, 0.58@-24deg. Looks like the SWR will be neither infinite
nor 1:1. I suspect it will be between 2:1 and 6:1 at 100MHz.

An easier experiment would be to take an average 100w transmitter, back it
down to minimum output into a 50 ohm coax section with a dummy load. Measure
the forward power with a 50 ohm dummy load and measure the forward power with
a 100 ohm dummy load. If the forward power reading increases with the 100
ohm load with no increase in input power then the delta increase is the
power being reflected by the transmitter.

As someone else pointed out, if the transmitter has a built in antenna tuner
or a tunable pi network output then a conjugate match will be achieved and
almost all of the reflected power will be re-reflected.

--

73, Cecil, KG7BK, 00TC (All my own personal fuzzy logic, not Intel's)

Date: 27 Oct 1994 20:41:12 GMT
From: rkarlqu@scd.hp.com (Richard Karlquist)
Subject: Where does the power go? Part 2

In article <9409267832.AA783201194@mails.imed.com>,
<mack@mails.imed.COM> wrote:
>

>Proposed experiment #1:

>

>Build an amplifier using a MAR-4 MMIC. This is a small transmitter that should
>have a 50 Ohm output impedance and be capable of 20 mW of output. Since there

Check the specs on the MAR-4. The output impedance is a "nominal" 50 ohms, but actually departs from it considerably. Most of these amplifiers have a 3 to 1 output VSWR spec. So the output impedance may be as high as 150 ohms.

Rick N6RK

Date: Thu, 27 Oct 1994 07:52:09 GMT
From: wa2ise@netcom.com (Robert Casey)

References<38hv7i\$mka@charm.magnus.acs.ohio-state.edu>
<38juuc\$7m3@cat.cis.brown.edu>, <38m114\$es1@hpscit.sc.hp.com>
Subject: Re: Q: Al heatsinks and black paint.

I've used black magic marker to make heat sinks dark. Paint would add a significant layer on the aluminium, maybe act like a thermal insulator even if it radiates whatever heat that gets thru better than bare metal. The magic marker coating is a lot thinner than paint would be.

Was never sure if the black magic marker-ing really helped or not....

Date: 27 Oct 1994 12:59:14 -0700
From: burt@teleport.com (Burt Keeble)

References<kludgeCy4vD8.EsD@netcom.com> <G.Moretti-271094093000@130.123.96.67>,
<kludgeCyC3JH.M90@netcom.com>
Subject: Re: The Little Razor Blade Radio

In article <kludgeCyC3JH.M90@netcom.com>,
Scott Dorsey <kludge@netcom.com> wrote:
*In article <G.Moretti-271094093000@130.123.96.67> G.Moretti@massey.ac.nz
(Giovanni Moretti) writes:

Text deleted for the usual reason.

*
*>One of my first projects (that worked) was a carbon microphone made by
*>breaking a razor blade in half and fixin each have so that the notches
*>faced upwards. A pencil lead was then placed across the two blades.
*>As you talk at it the resistance varies & voila - a carbon mike.

*
*Yup. You can even make a homebrew ribbon microphone with a couple of
*magnets, a transformer, and the foil from a Wrigley gum wrapper. But
*that's another thread.

I would very much enjoy it if you created that thread. This something-out-of-nothing stuff is very entertaining!

-burt

--

"We are all descended from a long line of determined, resourceful, microscopic tadpoles--champions every one." K.V.

End of Ham-Homebrew Digest V94 #318
